

January 7, 1951

Dear Dr. Hayes:

Your interesting note of the 31st Dec. has just been received. I hasten to reply to a particular suggestion, which has not escaped us, and has been submitted several times previously: the relationship of lambda to recombination.

or neither*

When we first discovered that K-12 was lysogenic, my wife's first thought was to determine what relationship, if any, this might have to the sexual process. Disinfected cultures (both sensitive and immune) were obtained in complementary cultures, and these proved to cross quite well, whether or not either*or both parents carried lambda. We are especially interested in this point because of the very close relationship of phage to recombination in Salmonella. In Salmonella, however, the "gamete" has very different properties, both genetically, and insofar as it is filtrable, from that of E. coli K-12. We have not been able to detect any "genetic" properties in filtrates or lysates, except for lambda itself, and this is a crucial test of any identification of lambda with a genetic function.

On the other hand, the stimulation of recombination by UV may very well be mediated by the activation of latent virus, in some secondary way, and these observations deserve very critical attention. We have been working lately on some of the details of UV-activation, and plan to compare the effects of UV re recombination on lambda-sensitive and lysogenic cultures.

Between some observations that Cavalli has written me, and some of our own, it may be possible to conclude that W-1177 and some of its ancestors carry a self-incompatibility factor. As far as I know, this factor is not shared by any of the stocks in your possession that could be crossed with W-1177, but we seem to have picked up the same factor again in some B-M- stocks. The picture is pretty murky, and we are trying to work it out. It does not look as if this should have any direct bearing on your findings, but I thought you might want to keep it in mind.

To return to lambda again, I should point out that although a few of the strains that cross with K-12 are lambda-sensitive, the majority are not. For a few of the strains, we have inter-crosses, and crosses with "disinfected" K-12 lines which are quite successful in the absence of any indication of lysogenicity. You are free, if you wish, to postulate additional latent viruses for which we have no sensitive indicator, and which do not show UV-activation of lysis, but for this purpose, such an assumption seems to me rather ad hoc.

Yours sincerely,

Joshua Lederberg